

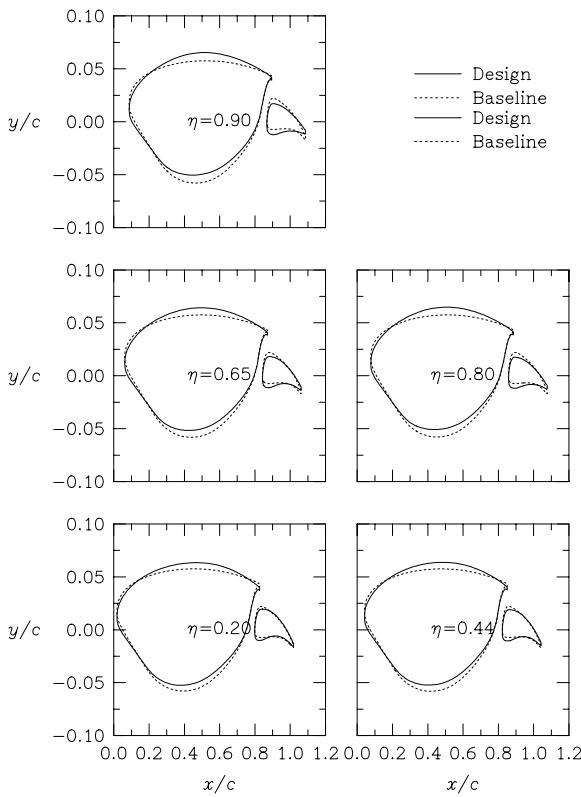
Large Scale Design Case

Turbulent Flow Over Slotted Cruise Configuration

5 Design cycles
16 CPU's
~5 Days wall clock time

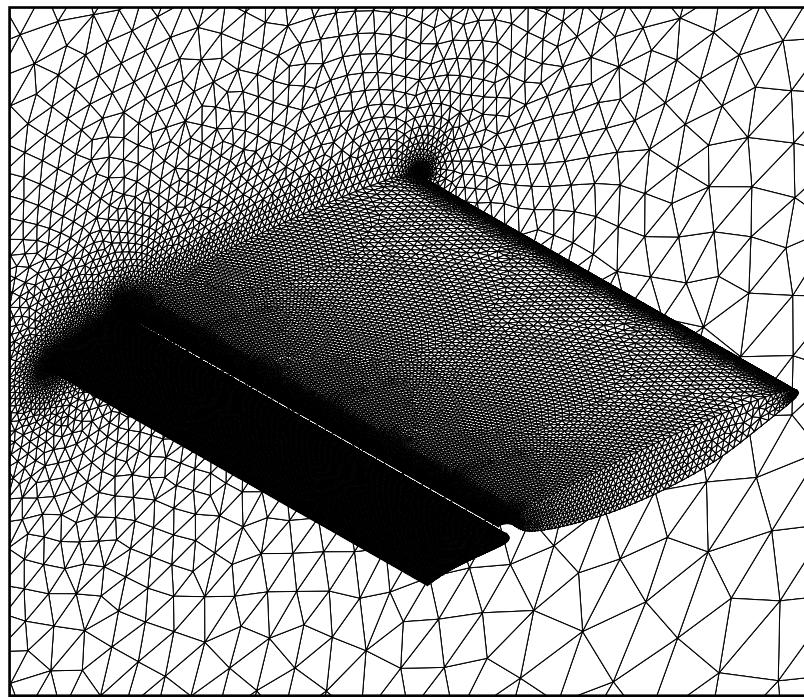
31 Design Variables

- Angle of attack
- 15 Camber values on each element



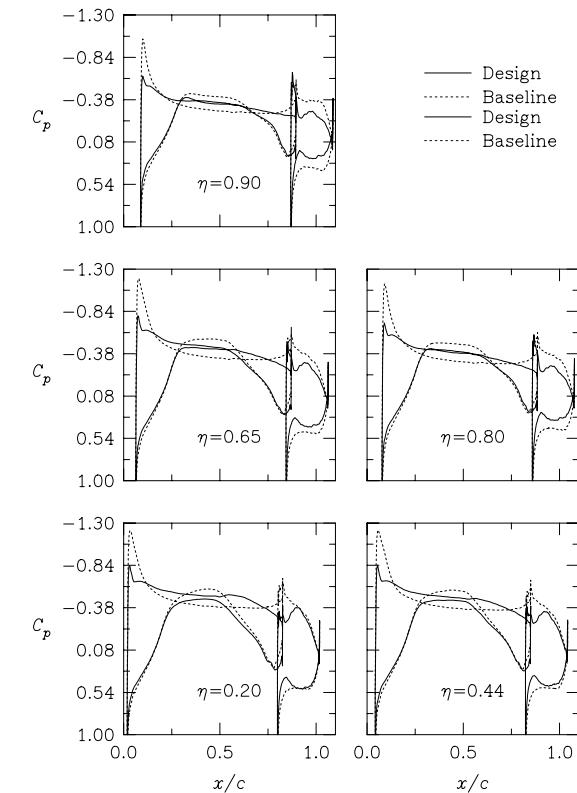
Goal: Reduce drag while maintaining lift

$$M_\infty = 0.75^\circ \quad Re = 6.2 \times 10^6$$



843,385 Nodes
4,796,360 Cells

12 GB memory required



Baseline Geometry Modified Geometry

$$\begin{array}{ll} \alpha = 2.81^\circ & \alpha = 3.29^\circ \\ C_L = 0.4375 & C_L = 0.4373 \\ C_D = 0.0399 & C_D = 0.0379 \end{array}$$